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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/741,308	ALBANNA ET AL.	
	Examiner	Art Unit	
	Matthew D. Hoel	3714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1 to 7, 9 to 17, 20 to 23, 25, 27 to 34, 36 to 41, 43 to 51, 53 to 61, 63, and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuyama, et al. (U.S. pre-grant publication 2003/0078086 A1) in view of Rosenberg, et al. (U.S. patent 5,691,898 A) and further in view of Storek (U.S. pre-grant publication 2004/0259651 A1).

4. As to Claim 1: '086 discloses all of the limitations of Claim 1, but lacks specificity as to a first input device and periodically obtaining acceleration data and selecting an output value to obtain the simulated first input device data. '086 teaches a system for use with a computer application configured to respond to second input device data from

a second input device (instrumented golf club or tennis racket, 200, Figs. 1 & 2), the second input device having a first format and a first range of values which are indicative of the movement of a simulated object in the computer application (sensor coordinate system in real space R with second range and format, since the instrumented golf club is the second input, Fig. 6, Paras. 121 to 125 being converted into player coordinate system with first range and format), the system comprising: '086 teaches a second input device (swingable instrument 200, Figs. 2 & 3, which can correspond to a bat, racket, club, etc.) a second input device, with a different range and format that than range and format of the player coordinate system (player coordinate system described in Paras. 121 to 125), the second input device including one or more sensors configured to measure acceleration (Para. 107) of an object at intervals (game space coordinates, Fig. 19, Para. 138) and creating second input device data representative of the acceleration of the object at intervals (Fig. 19, Para. 138 intervals; inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41) the second input device data having a second format different than the first format and a second range of values different than the first range of values (second range of values taken from instrumented golf club or game input device transformed from sensor coordinate system to player coordinate system with different format and range of values, Fig. 6, Paras. 121 to 125); and a processor (control section 1, Fig. 1, Paras. 99 to 101) configured to convert the second input device acceleration data into simulated first input device movement data (second range of values taken from instrumented golf club or game input device transformed from sensor coordinate system to player coordinate system

with different format and range of values, Fig. 6, Paras. 121 to 125), wherein the processor correlates the first and second formats and ranges of values whereby the second range of acceleration values is evaluated at intervals to determine the resulting motion of the object (inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41) and is then converted into the first range of values corresponding to motion of the simulated object, the simulated first input device data having the first format (second range of values taken from instrumented golf club or game input device transformed from sensor coordinate system to player coordinate system with different format and range of values, Fig. 6, Paras. 121 to 125), the processor further configured to provide the simulated first input device data to the computer application (transforming first input data or player coordinate space date to the computer application by converting it to game space coordinates, (Paras. 127 to 129).

5. '898, however, teaches responding to first input device date from a first input device (joystick used to simulate a tennis racket in a video game, Fig. 7, 35:42-65). The input information from this joystick in '898 would correspond to the player coordinate systems of Paras. 124 and 128 of '086. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the first input device of '898 to the golf swing game of '086. '898 is using measurements of the player input object in this case a joystick moving through player space, measuring the object's position, velocity, and acceleration. These components are measured to provide realistic damping forces to the user input object traveling through its range of motion traveling through the player coordinate space. The '898 passage describes a joystick being used

to simulate a racket in a tennis game. Using the accelerations taken by the instrumented club or racket measured by the '086 reference could be used to output realistic forces to the player "swinging" the racket with the joystick. For example, the initial resistance felt when the player is accelerating the racket at the beginning of the swing, followed by a "jolt" or deceleration force felt in the joystick when the virtual racket hits the ball, followed by a deceleration when the player finishes the virtual racket swing at the joystick's end of range of motion. During the sampling of the golf club or tennis racket's range of motion during the swing, the game space coordinates would be transformed to player space coordinates (the range of motion of the joystick; '086, Paras. 121 to 125); the input from the joystick would be transformed to game space ('086, Paras. 127 to 129) coordinates for the result of the input in the virtual space. This would have the advantage and effect of providing forces as realistic as possible over the range of the joystick's motion corresponding to forces felt in real life at corresponding points in the racket's range of motion in the swing. Regarding the newly claimed limitation of periodically obtaining the acceleration data and selecting an output value to obtain the simulated first input device data, this is simply a calibration procedure as outlined in Storek ('651). '651 discusses the offsets of the accelerometers in an instrumented golf club, analogous to the instrumented club or racket of Matsuyama ('086), having offsets from electrical offsets and the Earth's gravitation (Para. 67) and the desirability to use inclinometers with long-term predictability to overcome these offsets. Paras. 86 and 87 of '651 discuss inclinometers being used for such a calibration before a swing. The acceleration data are obtained and output values are

collected in Para. 86 of '651. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the calibration of '651 to the combination of Matsuyama ('086) and Rosenberg ('898). This modification would have the advantage of preventing the short-term offsets inherent in the accelerometer sensors from detracting from the realism of the game, especially when it is being used for athletic training purposes.

6. As to Claim 20: The combination of Matsuyama ('086), Rosenberg ('898), and Storek ('651) renders obvious a system for converting movement of an object from a first format having a first range of values into input device data of a second format having a second range of values that a computer application is configured to receive ('086, sensor coordinate system in real space R with second range and format, since the instrumented golf club is the second input, Fig. 6, Paras. 121 to 125 being converted into player coordinate system with first range and format), the system comprising a sensor unit including:

one or more sensors configured to measure acceleration of the object in one or more directions at a plurality of intervals and create signals indicative of the acceleration of the object at the plurality of intervals ('086, Fig. 19, Para. 138 intervals; inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41);

a processor that evaluates the acceleration data at the plurality of intervals and determines a first set of signals in the first range of values representative of the movement of the object in the first format from the acceleration data (control section 1, Fig. 1, Paras. 99 to 101);

a transmitter configured to communicate the signals in the first format ('651, Para. 84); and a user station having driver software configured to receive the signals in the first format ('651, Para. 84), convert the signals from the first range of values into simulated input device data having the second format and the second range of values using a conversion factor selected to correlate the first and second formats and ranges of values, and provide the simulated input device data to the computer application ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1), wherein the user station driver software further includes stored output data values corresponding to the first range of values and wherein the user station driver software periodically obtains the acceleration data and selects a stored output data values based on the acceleration data to provide the simulated input device data ('651, Paras. 67, 86, & 87);
wherein the simulated input device data is substituted in place of an input device data having the second format (player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1).

7. As to Claim 36: The combination of Matsuyama ('086), Rosenberg ('898), and Storek ('651) renders obvious a method of providing input to a computer application configured to receive first input device data having a first format and a first range of values ('086, Fig. 6, Paras. 121 to 125), the method comprising:

measuring the acceleration of an object at a plurality of intervals in one or more directions ('086, Para. 37);

evaluating the acceleration data at the plurality of intervals to determine the movement of the object ('086, Fig. 19, Para. 138 intervals; inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41);

creating second input device data representative of the movement of the object from the acceleration data, the second input device data having a second format and a second range different than the first format ('086, game space coordinates of intrumented club or racket transformed to player space coordinates, Fig. 6, Paras. 121 to 125);

converting the second input device data into simulated first input device data, the simulated first input device data having the first format, wherein the conversion of the second input device data into simulated first input device data includes using the measured acceleration to select a stored output data value wherein the selected output data value comprises the simulated first input device data ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1); and

substituting the simulated first input device data to the computer application in place of the first input device data wherein the first simulated input values have been converted using a conversion factor selected to correlate the first and second formats and ranges

of values from the second range of values to the first range of values, thereby simulating the first input device with the second input device ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1).

8. As to Claim 46: The combination of Matsuyama ('086), Rosenberg ('898), and Storek ('651) renders obvious a system of providing input to a computer application configured to receive first input device data having a first format and a first range of values, the system comprising ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1):

means for measuring acceleration of an object in one or more directions at a plurality of intervals; means for determining the movement of the object from the acceleration at a plurality of intervals ('086, Fig. 19, Para. 138 intervals; inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41);

means for creating second input device data representative of the movement of the object from the acceleration data, the second input device data having a second format and a second range of values different than the first format and first range of values

('086, Paras. 121 to 125, Fig. 6);

means for converting the second input device data into simulated first input device data using one of a plurality of conversion factors selected to correlate the first and second formats and ranges of values wherein the selection is based on the measured acceleration of the object, the simulated first input device data having the first format and range of values ('086, Paras. 121 to 125, Fig. 6); and

means for providing the simulated first input device data to the computer application, wherein the simulated first input device data is substituted in place of the first input device data, thereby simulating the first input device with the second input device ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1).

9. As to Claim 56: The combination of Matsuyama ('086), Rosenberg ('898), and Storek ('651) renders obvious a method for replicating first input device data of a first input device, the first input device data having a first format and a first range ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1), to a computer application, to control

movement of a graphical representation of an object ('086, controlling motion in game space coordinates, Paras. 126 to 129), the method comprising:

measuring the acceleration of the object with a second input device at a plurality of intervals; creating an electronic signal representative of the movement of the object by evaluating the acceleration data at intervals to determine the movement of the object ('086, Fig. 19, Para. 138 intervals; inclinations determined by acceleration sensor at intervals Δ_{T1}, Paras. 36 to 41), the electronic signal having a second format and second range of values different from the first format and first range of values;

translating the electronic signal into replicated first input device data having the first format and first range of values using a conversion selected from a plurality of stored conversion factors based on the acceleration data to correlate the first and second formats and range of values; and making the replicated first input device data available to the computer application, wherein the replicated first input device data is substituted in place of the first input device data, thereby replicating first input device data from the first input device with replicated first input device data from the second input device ('086, instrumented club or racket acceleration information transformed from real space coordinates to player space coordinates, Fig. 6, Paras. 121 to 125; player space coordinates transformed to game space coordinates, Fig. 7, Paras. 126 to 129; player space coordinates of '086 applied to joystick controlling simulated club or racket of '898, 35:42-65 as outlined in rejection of Claim 1).

10. As to Claim 2: The combination of '086, '898, and '651 renders obvious the system of claim 1, further comprising a transmitter configured to communicate the second input device data to the processor ('651, Para. 84).

11. As to Claim 3: The combination of '086, '898, and '651 renders obvious the system of claim 2, wherein the transmitter is a transceiver configured to allow two-way communication of data between the second input device and the processor ('651, instrumented golf club communicates with computer unit, Paras. 104 & 105).

12. As to Claim 4: The combination of '086, '898, and '651 renders obvious the system of claim 3, further comprising sensor firmware configured to recognize that data is being sent from the processor to the second input device ('651, instrumented golf club communicates with computer unit, Paras. 104 & 105).

13. As to Claim 5: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the computer application is a video game ('282, Abst.).

14. As to Claim 6: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the first input device is one of the following devices: a mouse, a joystick, or a keyboard, and the first input device data is mouse controller input data, joystick controller input data, or keyboard input data ('898, force applied to joystick controlling racket, Fig. 7, 12:42-65).

15. As to Claim 7: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the object is a golf club and the second input device is attached to the golf club ('282, Figs. 2 & 4, 11:53-67).

16. As to Claim 9: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the one or more sensors are accelerometers configured to measure the acceleration and angle of the object in one or more directions and the second input device data is representative of the acceleration and angle of the object ('282, Figs. 1-4, especially 3:51-61; see also inclination detector and 3-axis acceleration sensor in 10:27-49).

17. As to Claim 10: The combination of '086, '898, and '651 renders obvious the system of claim 9, further comprising sensor firmware, wherein the acceleration of the object is measured directly from the one or more accelerometers and the angle of the object is computed by the sensor firmware ('651, Para. 88).

18. As to Claim 11: The combination of '086, '898, and '651 renders obvious the combination of '086, '898, and '651 renders obvious the system of claim 10, further comprising a transmitter configured to communicate the second input device data to the processor, wherein the second input device additionally sends calibration data for the accelerometers to the processor to facilitate calculation of the angle of the object ('651, instrumented golf club communicates with computer unit, Paras. 104 & 105; calibration using inclinometers, Para. 67).

19. As to Claim 12: The combination of '086, '898, and '651 renders obvious the system of claim 11, wherein the transmitter is a transceiver configured to allow two-way communication of data between the second input device and the processor, and wherein data is sent from the processor to the second input device requesting the calibration data ('651, Paras. 65, 104, & 105).

20. As to Claim 13: The combination of '086, '898, and '651 renders obvious the system of claim 1, further comprising a sensor processor configured to assemble the second input device data into data frames to communicate to the processor configured to convert the second input device data ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

21. As to Claim 14: The combination of '086, '898, and '651 renders obvious the system of claim 13, wherein each data frame includes acceleration and angle measurements for the object ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

22. As to Claim 15: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the processor further comprises driver software, configured to convert the second input device data into simulated first input device data (Figs. 6 & 7, 12:46-13:29, the player coordinating system corresponding to the joystick coordinate system of '898, which would then be transferred to the game coordinate system as outlined in '282, 13-30-14:14).

23. As to Claim 16: The combination of '086, '898, and '651 renders obvious the system of claim 1, wherein the one or more sensors indicate multiple potential positions of the object at a given time and the processor determines in which of multiple potential positions the object is located ('282, Figs. 6 & 7, 10:15-50).

24. As to Claim 17: The combination of '086, '898, and '651 renders obvious the system of claim 16, wherein the object is a golf club and the

multiple potential positions include potential locations of the golf club in multiple quadrants of 90 degrees (plural quadrants shown in X, Y, Z spaces of Figs. 6 & 7, '282).

25. As to Claim 21: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the transmitter is a transceiver configured to allow two-way communication of data between the sensor unit and the user station ('651, Paras. 104 & 105).

26. As to Claim 22: The combination of '086, '898, and '651 renders obvious the system of claim 21, wherein the sensor unit further includes sensor firmware configured to recognize that data is being sent from the user station to the sensor unit ('651, Paras. 104 & 105).

27. As to Claim 23: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the computer application is a video game ('282, Abst.).

28. As to Claim 25: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the object is a golf club and the sensor unit attaches to the golf club ('282, Figs. 2 & 4, 11:53-67).

29. As to Claim 27: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the one or more sensors are accelerometers configured to measure the acceleration and angle of the object in one or more directions and the signal is representative of the acceleration and angle of the object ('282, Figs. 1-4, especially 3:51-61; see also inclination detector and 3-axis acceleration sensor in 10:27-49).

30. As to Claim 28: The combination of '086, '898, and '651 renders obvious the system of claim 27, wherein the sensor unit further includes sensor firmware, wherein the acceleration of the object is measured directly from the one or more accelerometers and the angle of the object is computed by the sensor firmware ('651, Para. 88).

31. As to Claim 29: The combination of '086, '898, and '651 renders obvious the system of claim 27, wherein the sensor unit additionally sends calibration data for the accelerometers to the driver software to facilitate calculation of the angle of the object ('651, instrumented golf club communicates with computer unit, Paras. 104 & 105; calibration using inclinometers, Para. 67).

32. As to Claim 30: The combination of '086, '898, and '651 renders obvious the system of claim 29, wherein the transmitter is a transceiver configured to allow two-way communication of data between the sensor unit and the user station, and wherein data is sent from the driver software to the sensor unit requesting the calibration data ('651, instrumented golf club communicates with computer unit, Paras. 104 & 105; calibration using inclinometers, Para. 67).

33. As to Claim 31: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the sensor unit further includes a sensor processor configured to assemble second input device data into data frames to communicate to the processor ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

34. As to Claim 32: The combination of '086, '898, and '651 renders obvious the system of claim 31, wherein each data frame includes acceleration and angle

measurements for the object ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

35. As to Claim 33: The combination of '086, '898, and '651 renders obvious the system of claim 20, wherein the one or more sensors indicate multiple potential positions of the object at a given time and the driver software determines in which of multiple potential positions the object is located ('282, Figs. 6 & 7, 10:15-50).

36. As to Claim 34: The combination of '086, '898, and '651 renders obvious the system of claim 33, wherein the object is a golf club and the multiple potential positions include potential locations of the golf club in multiple quadrants of 90 degrees (plural quadrants shown in X, Y, Z spaces of Figs. 6 & 7, '282).

37. As to Claim 37: The combination of '086, '898, and '651 renders obvious the method of claim 36, wherein the measuring includes measuring the acceleration and angle of the object in one or more directions and the creating includes creating second input device data representative of the acceleration and angle of the object ('282, Figs. 1-4, especially 3:51-61; see also inclination detector and 3-axis acceleration sensor in 10:27-49).

38. As to Claim 38: The combination of '086, '898, and '651 renders obvious the method of claim 37, wherein the measuring further includes computing the angle of the object using sensor firmware ('651, Para. 88).

39. As to Claim 39: The combination of '086, '898, and '651 renders obvious the method of claim 38, wherein the creating further includes assembling the measured

acceleration and angle data into data frames ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

40. As to Claim 40: The combination of '086, '898, and '651 renders obvious the method of claim 39, wherein each data frame includes acceleration and angle measurements for the object ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

41. As to Claim 41: The combination of '086, '898, and '651 renders obvious the method of claim 36, wherein the computer application is a video game ('282, Abst.).

42. As to Claim 43: The combination of '086, '898, and '651 renders obvious the method of claim 36, wherein the object is a golf club and the second input device data is representative of the movement of the golf club ('282, Figs. 2 & 4, 11:53-67).

43. As to Claim 44: The combination of '086, '898, and '651 renders obvious the method of claim 36, further comprising determining in which of multiple potential positions the object is located at a given time ('282, Figs. 6 & 7, 10:15-50).

44. As to Claim 45: The combination of '086, '898, and '651 renders obvious the method of claim 44, wherein the object is a golf club and the multiple potential positions include potential locations of the golf club in multiple quadrants of 90 degrees (plural quadrants shown in X, Y, Z spaces of Figs. 6 & 7, '282).

45. As to Claim 47: The combination of '086, '898, and '651 renders obvious the system of claim 46, wherein the measuring means further comprises means for measuring the acceleration and angle of the object in one or more directions and the

creating means further comprises means for creating second input device data representative of the acceleration and angle of the object ('651, Para. 88).

46. As to Claim 48: The combination of '086, '898, and '651 renders obvious the system of claim 47, further comprising means for computing the angle of the object ('651, Para. 88).

47. As to Claim 49: The combination of '086, '898, and '651 renders obvious the system of claim 48, further comprising means for assembling the measured acceleration and angle data into data frames ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

48. As to Claim 50: The combination of '086, '898, and '651 renders obvious the system of claim 49, wherein each data frame includes acceleration and angle measurements for the object ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

49. As to Claim 51: The combination of '086, '898, and '651 renders obvious the system of claim 46, wherein the computer application is a video game ('282, Abst.).

50. As to Claim 53: The combination of '086, '898, and '651 renders obvious the system of claim 46, wherein the object is a golf club and the second input device data is representative of the movement of the golf club ('282, Figs. 2 & 4, 11:53-67).

51. As to Claim 54: The combination of '086, '898, and '651 renders obvious the system of claim 46, wherein the second input device data indicates multiple potential positions of the object at a given time, the system further comprising means for

determining in which of the multiple potential positions the object is located at the given time ('282, Figs. 6 & 7, 10:15-50).

52. As to Claim 55: The combination of '086, '898, and '651 renders obvious the system of claim 54, wherein the object is a golf club and the multiple potential positions include potential locations of the golf club in multiple quadrants of 90 degrees, along a swing path, the determining based on the swing path (plural quadrants shown in X, Y, Z spaces of Figs. 6 & 7, '282).

53. As to Claim 57: The combination of '086, '898, and '651 renders obvious the method of claim 56, wherein the measuring includes measuring the acceleration and angle of the object in one or more directions and the creating includes creating an electronic signal representative of the acceleration and angle of the object ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

54. As to Claim 58: The combination of '086, '898, and '651 renders obvious the method of claim 57, wherein the measuring includes computing the angle of the object using sensor firmware ('651, Para. 88).

55. As to Claim 59: The combination of '086, '898, and '651 renders obvious the method of claim 57, wherein creating the electronic signal includes assembling the measured acceleration and angle data into data frames ('651, Para. 88, navigation frame including angle and angular acceleration calculated digital signal processor).

56. As to Claim 60: The combination of '086, '898, and '651 renders obvious the method of claim 56, wherein the object is a golf club and the measuring includes measuring the movement of the golf club ('282, Figs. 2 & 4, 11:53-67).

57. As to Claim 61: The method of claim 56, further comprising receiving data from the computer application ('282, player coordinate system converted by computer into game space coordinate system in 13:30-14:14 after being converted by computer from sensor coordinate system (corresponding to second input device) to player coordinate system (corresponding to first input device) in 12:32-13:29).

58. As to Claim 63: The combination of '086, '898, and '651 renders obvious the method of claim 56, wherein the electronic signal indicates multiple potential positions of the object at a given time, the method further comprising determining in which of the multiple potential positions the object is located at the given time ('282, Figs. 6 & 7, 10:15-50).

59. As to Claim 64: The combination of '086, '898, and '651 renders obvious the method of claim 63, wherein the object is a golf club and the multiple potential positions include potential locations of the golf club in multiple quadrants of 90 degrees, along a swing path, the determining based on the swing path (plural quadrants shown in X, Y, Z spaces of Figs. 6 & 7, '282).

60. Claims 8 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over '086, '898, and '651 in view of Evans (U.S. patent 3,788,647 A).

61. As to Claims 8 and 26: The combination of '086, '898, and '651 discloses all of the limitations of Claims 8 and 26, but lacks specificity as to the the object being a system user's arm and the second input device being attached to the system user's arm. Evans, however, discloses accelerometers with two-way radio communication in plates attached to a user's arm (Abst., Fig. 1, 2:33-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the arm-worn accelerometers of '647 to the combination of '086, '898, and '651. Using accelerometer plates attached to a player's arm or leg would have the advantage of providing more precise information for diagnosing a player's swing, since the golf club's motion originates with the motion of the player's arms and legs, so providing accelerometer data directly from the player instead of indirectly from the golf club's swing would provide additional insight into the source of any errors the player might be making.

62. Claims 18 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over '086, '898, and '651 in view of Childs (U.S. patent 5,623,545 A).

63. As to Claims 18 and 35: The combination of '086, '898, and '651 discloses all of the limitations of these claims, but lacks specificity as to receiving a certain amount of first input device data at a given time and the processor divides the simulated first input device data into multiple smaller portions of the certain amount of the simulated first input device data to provide to the computer application. Childs, however, in '545 discloses this limitation (Abst., 3:35-4:3). It would have been obvious to one of ordinary

skill in the art at the time the invention was made to have applied the transmitting of smaller blocks of data as disclosed in Childs '545 to the combination of '086, '898, and '651. This would have the advantage of saving memory space and reducing latency times as larger blocks of data would not have to be assembled before transmission; additionally the transmission time for any particular block of data would be shorter than for any given larger block of data ('545, 4:4-23).

64. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over '086, '898, and '651 in view of Lum, et al. (U.S. pre-grant publication 2004/0224763 A1).

65. As to Claim 19: The combination of '086, '898, and '651 discloses all of the limitations of Claim 19, but lacks specificity as to the processor being configured to have a first mode and a second mode, wherein in the first mode a first movement results in a first simulated input resulting in a first movement of a game character, and wherein in the second mode the first movement results in a second simulated input resulting in a second movement of the game character. Lum, however, in '763 teaches such first and second character modes (Paras. 7 to 10). One of ordinary skill in the art at the time the invention was made would have found it advantageous to apply the character modes outlined in Lum '763 to the combination of '086, '898, and '651. The examiner notes that there are different types of input devices on the controller of Lum '763 (thumbsticks 132 (thumb-sized joysticks) and D-pad 134, Para. 26, Fig. 1). Having these two modes would advantageously allow the player to alternate between simulating the golf club or

racket with either type of controller, depending on player preferences and game requirements, instead of only with one or the other.

66. Claims 24, 42, 52, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over '086, '898, and '651 in view of Nakayama, et al. (U.S. patent 6,244,956 B1).

67. As to Claims 24, 42, 52, and 62: The combination of '086, '898, and '651 discloses all of the limitations of these claims but lacks specificity as to the input device being a mouse. Nakayama '956, however, discloses the input device being a mouse, and the input device data being mouse controller input data (Abst., mouse motion used to swing bat, 2:24-32, 8:17-32). Swinging a bat in a video game is analogous to swinging a golf club or tennis racket as in '086. One of ordinary skill in the art at the time the invention was made would have found it advantageous to apply the mouse input of Nakayama '956 to the combination of '086, '898, and '651. It would have an advantage that the player would be able to use a mouse instead of only a joystick or other type of game console controller, which would allow the game developers to possibly port a game from a game console format to a PC format. The use of a mouse is particularly advantageous in that it allows the input of direction and magnitude in one quick motion ('956, 8:17-32), where as a joystick only has direction, so magnitude would depend on pointing the joystick in a certain direction for a period of time. The mouse input could thus be advantageous in game situations requiring quick inputs, like the

baseball game of '956 in which the player is attempting to hit a thrown ball with a virtual bat.

Response to Arguments

68. Applicant's arguments with respect to claims 1 to 64 have been considered but are moot in view of the new ground(s) of rejection. Regarding the applicants' remarks about Matsuyama '086 (pre-grant publication for Matsuyama 6,767,282 B2 already cited), Matsuyama does detect the acceleration of the simulated club or racket using accelerometers (Paras. 36 to 44). The examiner respectfully disagrees with the applicants as to the claims' condition for allowance.

Citation of Pertinent Prior Art

69. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kubica, et al. in U.S. patent 5,990,869 A and Paley in U.S. patent 5,296,871 A teach computer mice with force feedback that could be used in conjunction with the mouse-controlled bat of Nakayama '956 in an analogous manner to the force feedback applied to the joystick-controlled bat of Rosenberg '898.

Conclusion

70. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

71. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

72. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew D. Hoel whose telephone number is (571) 272-5961. The examiner can normally be reached on Mon. to Fri., 8:00 A.M. to 4:30 P.M.

73. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dmitry Suhol can be reached on (571) 272-4430. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

74. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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